

### **INTERVIEW SUMMARY**

Applicants thank the Examiner for the courtesy of a telephonic interview on February 26, 2009 with Mark Pitchford and the undersigned. Applicants' representative discussed the invention in general with respect to U.S. Patent No. 5,420,883 to Swensen et al. and the meaning of "service operations" as defined and claimed in the present Application with Examiner Ronnie M. Mancho. No agreement was reached, no demonstration was given, and no exhibit was shown.

### **REMARKS**

Applicants have thoroughly considered the Office action dated December 12, 2008 and have amended the application accordingly and as discussed during the interview. Claims 1, 14, and 50 have been amended by this Amendment G. Claims 1, 3, 8, 14-16, 18-22, 26, 50, 52-58, 62, and 76 are thus presented in the application for further examination. Reconsideration of the application as amended and in view of the following remarks is respectfully requested.

### **Support for Amendments**

Support for the amendments to claims 1, 14, and 50 can be found in the Application at, for example, paragraphs 37-42 and FIG. 3.

### **Claim Rejections under 35 U.S.C. § 103**

Claims 1, 3, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,420,883 to Swensen et al. (hereinafter Swensen) in view of U.S. Patent No. 7,073,753 to Root et al. (hereinafter Root). Applicants submit that the cited references fail to teach or suggest each and every aspect of the claims as presented.

Swensen teaches a communications and control system for providing a safety buffer between trains. The system of Swensen sets up zones on a rail system and prevents one train from entering a zone occupied by another train, including a safety buffer (time and or distance based) between the trains when transitioning between zones (see Swensen at Col. 2,

Line 65 to Col. 3, Line 26; and Col. 4, Line 51 to Col. 5, Line 50). Swensen is silent regarding directing operations at a service facility such as scheduling maintenance bays, work crews, tools, and ordering parts.

Aspects of the present invention are directed to directing servicing operations at service facilities as part of an overarching railway operation plan. To this end, an infrastructure processor 202 analyzes this input data and optimizes the railroad infrastructure level 100 operation by issuing work orders or other instructions to the service facilities for the particular trains to be serviced, as indicated in block 226, which includes instructions for preparing for the work to be done such as scheduling work bays, work crews, tools, and ordering spare parts (see Application at paragraph [0040] and also paragraphs [0042], [0046], [0048], [0056], and [0057]).

To this end, claim 1 recites, "... said first processor controlling the servicing operations of the railroad infrastructure in accordance with the generated output instructions for the railroad infrastructure by issuing work orders to service facilities for implementing the servicing operations, said work orders comprising at least one of the following: refueling instructions, scheduling work bays, scheduling work crews, scheduling tools, or ordering parts...."

Claim 14 recites, "... a first level configured to control a servicing operation within the first level, said first level including first level operational parameters defining changes in operational characteristics of service facilities of the railroad infrastructure and data of the first level, said controlling a servicing operation comprising issuing a work order to a service facility for implementing the servicing operation, said work order comprising at least one of the following: refueling instructions, scheduling a work bay, scheduling a work crew, scheduling a tool, or ordering a part...."

Claim 50 recites, "...a first level including first level operational parameters defining changes in operational characteristics of service facilities of the railway system and data of the first level, said operational characteristics comprising availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives, or parts...."

Root is also silent regarding directing operations at a service facility such as scheduling maintenance bays, work crews, tools, and ordering parts.

Applicants submit that the cited references thus fail to teach each every element of claim 1 and that claim 1 is therefore allowable over the cited art. Claims 3 and 8 depend from claim 1 and are allowable over the cited reference for at least the same reasons as the independent claim from which they depend.

**Claim Rejections under 35 U.S.C. 102**

Claims 14-16, 18-22, 26, 50, 52-58, 62, and 76 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,828,979 to Polivka et al. (hereinafter Polivka). However, a claim is anticipated only if each and every element as set forth in the claim is disclosed, either expressly or inherently, in a single prior art reference. Verdegal Bros. v. Union Oil. Of California, 814 F.2d 628, 631 (Fed. Cir.1987). Applicants submit that each and every element as set forth in claims 1, 3, 8, 14-16, 18-22, 26, 50, 52-58, and 62 is not found, either expressly or inherently, in Polivka. Thus, the cited reference does not anticipate the claimed invention.

At page 8 of the Office action, the Examiner asserts the Applicants are "making references to sections of Polivka that are in contrast to the sections recited by the examiner." Applicants have not discussed every portion of Polivka cited by the Examiner with respect to every element of every claim. However, Applicants have not argued that Polivka does not teach anything relevant to the present invention. Instead, Applicants must only show that Polivka fails to teach at least one element of each independent claim, and Applicants have therefore only discussed the deficiencies of Polivka. Applicants also note that the Examiner is factually incorrect. In the previous response, Amendment E, Applicants discussed the teachings of Polivka at Cols. 4 and 5 and noted that Polivka failed to teach controlling operational characteristics of service facilities of the railroad infrastructure based on data from other levels of the multi-level management system (see Amendment E at page 11).

At pages 8 and 9 of the Office action, the Examiner asserts that Polivka at Col. 4, Lines 39-67, Col. 5, Lines 1-64, and Col. 6, Lines 36-64 discloses controlling operational characteristics of service facilities of the railroad infrastructure. However, in neither the cited portions of Polivka, nor the rest of Polivka, are there any reference to service facilities. Further, the only reference to maintenance refers to responding to movements of maintenance vehicles on the tracks, the only reference to infrastructure is to a

communications infrastructure, and there is no reference to repairing, replenishing, or refueling a train or locomotive. Polivka disregards service facilities management and anticipates that plans for such service are made outside of the movement plan and merely entered into the system as exceptions to the movement plan. At Col. 2, Lines 7-13, Polivka states:

"The same may be said of anomalies, such as track outages, temporary speed restrictions, the presence on the track of track forces (repair/maintenance crews), occurrence of hot wheel bearings, and the like. It is desirable to provide a method and system which responds dynamically to such **unplanned** events in a manner that is assured to be very cost efficient." (emphasis added)

Polivka discloses a system for controlling the "movement of plural trains through a network of track in a multiple route railway system" (see Polivka at column 1, lines 7-19). The system of Polivka includes a system wide planner, a dispatcher, and an onboard computer on each train to be controlled. The system wide planner determines a coarse schedule which the dispatcher uses to develop a movement plan. The dispatcher directs the movement of trains and track force vehicles (i.e., vehicles riding on the tracks) according to the movement plan by providing a trip plan to each train or track force vehicle and may direct track switches and signals to accommodate the movement plan (see Polivka at Col. 4, Line 39- Col. 5, Line 4). Polivka does not disclose controlling operational characteristics of service facilities such as service and maintenance (e.g., refueling, consumables replenishing, and engine repair) as part of an overarching infrastructure level plan based on data from each train, consist, and locomotive in the multi-level management system and controlling the movement of the trains, consists, and locomotives as a function of the service plan (e.g., operational characteristics of the service facilities). In other words, Polivka is silent regarding directing operations at a service facility such as scheduling maintenance bays, work crews, tools, and ordering parts.

In contrast to the cited art, the present application teaches controlling and coordinating trains and infrastructure equipment as a function of input from trains in the network and service facilities of the railroad infrastructure. The system develops and applies a service plan as a function of infrastructure data and data from trains within the network. An infrastructure level 100 of the multi-level railway system refers to, for example,

maintenance facilities and service sidings. Infrastructure data includes facility location, facility capabilities (both static characteristics such as the number of service bays, as well as dynamic characteristics, such as the availability of bays, service crews, and spare parts inventory), facility costs (such as hourly rates, downtime requirements), and other data such as weather conditions, natural disaster and business objective functions. The infrastructure processor 202 analyzes this input data and optimizes the railroad infrastructure level 100 operation by issuing work orders or other instructions to the service facilities for the particular trains to be serviced, as indicated in block 226, which includes instructions for preparing for the work to be done such as scheduling work bays, work crews, tools, and ordering spare parts. The infrastructure level 100 also provides instructions that are used by the lower level systems. Track commands 228 are issued to provide data to revise the train movement plan in view of a service plan (or a change to a service plan), advise the rail yard of the service plan such as reconfiguring the train, and provide substitute power of a replacement locomotive. Train commands 230 are issued to the train level 300 so that particular trains that are to be serviced may have restricted operation or to provide on-site servicing instructions that are a function of the service plan (see Application at paragraphs [0038]-[0041]). Aspects of the invention enable the railway system to dynamically adapt to changes in the capability and availability of both trains, and all of the service equipment necessary to support the railway infrastructure (see Application at paragraphs [0040], [0042], [0046], [0048], [0056], and [0057]).

Claim 14 recites, "... a first level configured to control a servicing operation within the first level, said first level including first level operational parameters defining changes in operational characteristics of service facilities of the railroad infrastructure and data of the first level, said controlling a servicing operation comprising issuing a work order to a service facility for implementing the servicing operation, said work order comprising at least one of the following: refueling instructions, scheduling a work bay, scheduling a work crew, scheduling a tool, or ordering a part...."

Claim 50 recites, "... a first level including first level operational parameters defining changes in operational characteristics of service facilities of the railway system and data of the first level, said operational characteristics comprising availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives, or parts...."

Applicants therefore submit that the cited references fail to teach each and every element of the invention as claimed and that claims 14 and 50 are allowable over the cited art. Claims 15-16, 18-22, 26, 52-58, 62, and 76 depend from these claims and are allowable over the cited art for at least the same reasons as the claims from which they depend.

## CONCLUSION

In view of the foregoing, applicants submit that claims 1, 14, and 50 are allowable over the cited art. The remaining dependent claims are believed to be allowable for at least the same reasons as the independent claims from which they depend.

It is felt that a full and complete response has been made to the Office action, and applicants respectfully submit that pending claims 1, 3, 8, 14-16, 18-22, 26, 50, 52-58, 62, and 76 are allowable over the cited art and that the subject application is now in condition for allowance.

The fact that applicants may not have specifically traversed any particular assertion by the Office should not be construed as indicating applicant's agreement therewith.

The Commissioner is hereby authorized to charge \$130.00 to cover the fee for a one-month extension of time up to and including today's date, or charge any underpayment to Deposit Account No. 07-0846.

Respectfully submitted,

/Frank R. Agovino/

Frank R. Agovino, Reg. No. 27,416  
SENNIGER POWERS  
100 North Broadway, 17th Floor  
St. Louis, Missouri 63102  
(314) 231-5400

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